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ABSTRACT

This document outlines the Kansas plan for making every state citizen a learner and a worker by the year 2000. The goal of the plan is to take new approaches to education and human resources management that emphasize learning, flexibility, and productive participation in work and society throughout life. The plan lists the skills that will be required of the work force and suggests potential strategies to inculcate each skill in present and future workers. The plan requires that the various segments of the educational community work toward improving the educational process in the following areas: integration of learning and working; high skills and high wages jobs; information required for guidance, training, and placement; individualization of services and programs; articulation of programs and schools; funding sources and processes; accountability for results and use of financial resources; future and current workers; and leadership. (An appendix lists competencies and skills identified by the Secretary's Commission on Achieving Necessary Skills.) (KC)

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ED 362 673

# Kansas Training and Retraining Plan

Economic Development • Lifelong Learning • Economic Development • Lifelong Learning • Economic Development • Lifelong Learning • Economic Development • Lifelong Learning
NEW
WORKFORCE
SKILLS

May 1991
Revised November 1992

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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# Strategic Directions for Kansas Education

The Kansas State Board of Education is charged with the general supervision of public education and other educational interests in the state. While clearly acknowledging the role and importance of local control, the State Board of Education has the responsibility to provide direction and leadership for the structuring of all state educational institutions under its jurisdiction.

The beginning place for determining the mission for the Kansas State Board of Education is the assumption that all Kansas citizens must be involved in their own learning and the learning of others. It is the combined effort of family, school, and community that makes possible the development of a high quality of life. It is the parent who is the first "teacher" of children. As we grow older, we learn that the school, the workplace, and the community support our lifelong learning and our training and retraining. The Board recognizes the responsibility it holds for Kansas educational systems and promoting quality education programs. The mission for Kansas education is:

**To prepare each person with the living, learning, and working skills and values necessary for caring, productive, and fulfilling participation in our evolving, global society.**

We believe that the strategic directions for the structuring of Kansas education must be organized to:

- create learning communities
- develop and extend resources for parenting programs and early childhood education
- expand learner-outcome curriculum and learner-focused instruction
- provide inclusive learning environments
- strengthen involvement of business and industry in education
- provide quality staff and organizational development.

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# Kansas Training
# And
# Retraining Plan

May 1991

Revised

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# INTRODUCTION

Positioning Kansas to be economically competitive in a global society while increasing the quality of life of its citizens requires a re-examination of the economic and educational structures of the past. The movement from an industrial model with its business and labor incentives to an information and service base with a focus on customer needs demands a new focus upon Kansas citizens and what they will be doing to increase productivity and their quality of life. There is little question that human resource development, information processing, and customization of products and services will be the keys for economic success. Smart people who are lifelong learners trained in the **new workforce skills** and who can identify and solve problems and broker customized solutions will be the economic leaders.

Kansas now has a leadership advantage: all educational institutions, with the exception of professional training (universities), are under the direction of a single governmental unit, the State Board of Education. The educational restructuring responsibility of the State Board gives Kansas the unique advantage of addressing all of lifelong learning so that the new workplace skills will be in the elementary and secondary schools as well as the community colleges and vocational schools. This advantage will leverage the economic position of Kansas ahead of other states. It is imperative that the Board, the Governor, the Legislature, and all citizens of Kansas understand the importance of restructuring education, training and retraining, and the new educational skills needed for 21st century success.

# TRAINING AND RETRAINING PLAN

## THE VISION

In 2000, every Kansan is a learner and a worker. Learning is working and working is learning and both are high priorities in everyone's life. When exiting from formal education, all Kansans have future basic skills which allow them to pursue additional schooling or training or to work at a high performance job. In fact for Kansans, postsecondary education or training is a right rather than a privilege.

In 2000, all Kansas businesses employ high quality workers. To maintain a quality workforce and to ensure high productive work, all employers are committed to investments in the education and training of their workers. Lifetime education and training are supported at the state and local level as well as by the private sector.

In 2000, there are no barriers to labor force participation in Kansas. Minorities, single parents, women, older workers, and disabled persons participate in the workforce through a supportive work environment. Workers have no outside pressures from child care, elder care, or family illness, because programs are available to help employees solve work/family problems. The employers promote a supportive work environment to retain valued employees and to attract new ones.

In 2000, a job information system matches qualified workers with jobs so that skills already available in the labor market are used more effectively. This information system also provides counseling services and data which align job seekers with education programs and skills.

## THE PLAN

GOAL: TO MAKE THIS VISION A REALITY, THE KANSAS BOARD OF EDUCATION RECOMMENDS AND PROMOTES NEW APPROACHES TO EDUCATION AND THE MANAGEMENT OF HUMAN RESOURCES THAT EMPHASIZE LEARNING, FLEXIBILITY, AND PRODUCTIVE PARTICIPATION IN WORK AND SOCIETY THROUGHOUT THE ENTIRE LIFE OF A KANSAN.

### Problem

Achieving this goal in Kansas will require a restructuring in delivering education that emphasizes outcomes learning, flexibility, and productive participation in work and society throughout the entire life of the individual Kansan. A network of learning communities comprised of educational institutions, public and private agencies, and community groups, should be developed and implemented that will help children reach school healthy and ready to learn, prepare people for rewarding work, and enable adults to be self-sufficient. Rather than our current piecemeal approach of fragmented and unconnected policies in developing a workforce, Kansas needs a comprehensive network of education that links work to education and takes into account the interrelated needs and problems of the student. In this network, secondary and postsecondary education would connect and articulate the levels, programs, support services, and institutions of education.

Time is of utmost importance in restructuring the current system of preparing a workforce into a network of delivering education/training to Kansas. The state is moving toward an economy in which information and knowledge are critical, basic and advanced skills in reading comprehension and mathematics are vital, and social and interpersonal abilities are necessary. Yet, there is already a gap between what is needed and what is available in these areas. The gap will widen under business-as-usual practices. Failure to act now could add up to a major competitive handicap for Kansas business and economy, resulting in low wages for low skills and a waste of human resources.

The State Board of Education intends to take responsibility for designing a lifelong learning-working network and adopting policy which will enable the network to function. The network will provide the components essential to producing a flexible, adaptable workforce:

1. Skills required of the workforce
2. Access for individuals to information and education
3. Coordination among program providers and funding agencies.

## SKILLS REQUIRED OF THE WORKFORCE

School-based skills are not always the same thing as workplace skills. When employers criticize the educational preparation of the high school graduates they hire, they are assessing them in terms of the kinds of things they want their employees to be able to do in the workplace. When educators assess these same students to determine their educational capabilities, they are looking at the kinds of tasks completed in the classroom. There is today considerable misunderstanding between employers and employees as to what they mean when they say "prepared for work."

There is even less understanding about the preparation future workers will need. Better preparation of workers for today's jobs will not meet the skills and productivity needed in tomorrow's jobs, if America is going to compete in a global economy. It should be noted that more is needed than just reforming education to make changes for educating future workers with high skills. **BUSINESS ALSO HAS TO CHANGE IF PRODUCTIVITY GROWTH IS TO IMPROVE.** However, the vast majority of businesses do not recognize the need for reorganization of the way work is done. Few employers expect skill requirements of their workers to change, despite the national warning that America must improve its productivity to stay competitive in the world economy.

The Commission on the Skills of the American Workforce summed up the challenge of maintaining an equilibrium between the education and skill levels of its workers and the demands of their jobs:

| Is There a Skills Shortage? No | Is There a Skills Shortage? Yes |
|---|---|
| • No, if we stay with the Low Wage Model | • Yes, if we want high living standards |
| • Because employers only want:<br>— Good attitude<br>— Good work ethic<br>— Reliability<br>— Good personality<br>— Pleasant appearance | • Yes, if we want to increase productivity and to compete worldwide<br>• Yes, if we need workers who can learn and be flexible |

National reports* studied the future workplace of America and identified the following skills and behavior needed for employment in the future: (1) learning to learn; (2) reading, writing, and computation; (3) listening and oral communication; (4) creative thinking and problem solving; (5) self-esteem, goal setting, motivation, and personal career development; (6) interpersonal skills, negotiations, and teamwork; and (7) organizational effectiveness and leadership. Chart 1 identifies the future workplace skills and behavior according to national authorities.

In 1989, a business training study surveyed 1,773 Kansas businesses to determine skills needed to adapt to technological changes anticipated over the next five years.** The skills and percent of study respondents who identified the need are as follows:

| Skill | Percent |
|---|---|
| Adaptability/flexibility | 72 |
| Problem-solving | 72 |
| Teamwork | 71 |
| Goal setting and personal motivation | 71 |
| Proper attitudes toward work and work habits | 70 |
| Comprehension/understanding | 68 |
| Organizational effectiveness and leadership | 68 |
| Microcomputer | 67 |
| Listening and oral communication | 65 |
| Business/management | 58 |
| Computation | 56 |
| Interpersonal relations | 56 |
| Technical | 56 |
| Reading | 51 |

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* National Alliance of Business, *Fourth R., Workforce Readiness* (1987); A Committee for Economic Development, *Investing in our Children: Business and the Public Schools,* 1985; National Academy of Science, *High Schools and the Changing Workplace: The Employers' Views;* American Society for Training and Development and the U.S. Department of Labor, *Workplace Basics: The Skills Employers Want,* 1988; Office of Educational Research and Improvement, U.S. Department of Labor, *Workplace Competencies: Improving Literacy and Employment Readiness,* 1990.

** University of Kansas, Business Training Study (1989), a study sponsored by Kansas Inc. and KSBE.

# Chart 1

## SKILLS NEEDED BY FUTURE WORKFORCE

| Skills* | Carnevale, Gainer, and Meltzer* | Brock, Marshall, Carnevale, Tucker, Sculley, etc.* | Carkhuff* |
|---|---|---|---|
| Learning to learn | Exposure to various learning strategies and analytical approaches and instruction on how best to apply strategies awareness of one's own learning approach | An exhibited capacity to learn | Learning to adjust and adapt<br>Processing skills |
| Reading, writing, computation | Basic academic skills:<br>Reading (analytical, summary, comprehension)<br>Writing (analysis, conceptualization, synthesis, distillation of information, clear articulation)<br>Mathematics (problem identification, reasoning, estimation, problem solving) | Demonstrated ability to read, write, compute, and perform at world class levels in general school subjects (math, physical and natural sciences, technology, history, geography, politics, economics, and English) | Receiving information<br>Processing skills |
| Listening and oral communication | Listening: content, conversation long-term context, emotional meaning and directions<br>Oral: recognizing own style of communication and approaches that are different from own and how to adjust | | Information processing<br>Giving information<br>Receiving information |
| Creative thinking/problem solving | Creative thinking: problem solving, personality awareness and development, and group team building<br>Problem solving: cognitive group interaction and problem processing skills | An exhibited capacity to think and solve problems | Organizational processing<br>Thinking and initiating skills |
| Self-esteem, goal setting—motivation and personal career development | Self-esteem: recognize current skills and understand emotions and abilities to cope with stress, change, and criticism<br>Goal setting/motivation: self-awareness, self-direction, and adaptability<br>Personal/career development: techniques for understanding and expanding skills inventories, career planning, and management | | Interpersonal processing skills |
| Interpersonal skills, negotiations, and teamwork | Interpersonal skills: ability to judge and balance appropriate behavior, cope with undesirable behavior in others, absorb stress, deal with ambiguity, inspire confidence in others, share responsibility, and interact with others<br>Negotiations: techniques for separating people from problem, focusing on interests not positions, inventing options for mutual gain, and using objective criteria<br>Teamwork: recognize and cope with various personalities, understand group dynamics, and recognize skills of fellow members | An exhibited capa- vork effectively alone or in groups | Ability to think and work together in the common cause of a mission<br>Technologizing (breaking jobs into tasks) |
| Organizational effectiveness and leadership | Organizational effectiveness: understanding of organizations and why they exist<br>Leadership: Understanding goals and strategies of organization, developing and communicating a vision, influencing the behavior of others, and projecting emotional stability | | Strategic systems, operations, and performance planning<br>Synthesizing goals and operationalizing programs |





*Material was taken from *Workplace Basics: The Skills Employers Want*, Washington, D.C.: U.S. Department of Labor, American Society for Training and Development, 1989; *America's Choice: high skills or low wages*, New York: National Center on Education and Economy, Commission on the Skills of American Workplace, 1990; and *The Age of the New Capitalism*, Amherst, Mass: Carkhuff Thinking Systems, 1985.



Program Planning, Research, and Evaluation
10/10/90

## Potential Strategies

1. The assessment and remediation of basic skills or employability enhancement skills will be available through community colleges for all postsecondary institutions.
2. Elementary and secondary exit outcomes will require basic skill development and employability enhancement skills. (See QPA model.)
3. The community colleges and area vocational-technical schools will develop a program designed to market the need for new workplace skills.

### Integration of Learning and Working

As Kansas' workforce matures, outdated job skills reduce flexibility in the labor market. Added to the outdated skill problem is the smaller cohort of new workers who need to be educated and trained in workplace skills. The challenge is to help the larger group of existing workers adjust to changing work demands and to make the smaller group of new workers high performing and technically skilled.

Educating the new workers will require the restructuring of education. IMPLEMENTING REFORM IN EDUCATION IS NO LONGER ENOUGH. As numerous critics claim,* only a major paradigm shift in education will suffice in salvaging America's, and Kansas', place in the world economy.

Paramount to the restructuring of education is the concept of lifelong learning. To create a stronger, more competitive workforce, Kansans must become lifelong learners. Lifelong learning can do the following:

- Prepare children for learning in formal education
- Prepare youth for high wages, rewarding work lives, and for participation in community life
- Help adults to be self-sufficient and socially responsible through high productive work and skill renewal and to make some provision for their own retirement needs
- Keep older citizens active and independent.**

As a natural complement to restructuring the education system, learning in the workplace must increase. The success of America, and Kansas, to adapt to the demands of the international marketplace hinges on the ability of employees to become productive, high performance workers. The work skills required in the future will have to be learned and often relearned by experienced workers in the labor force. As change continues to accelerate in the workplace, more training and retraining will be required. Workers increasingly will need more advanced skills

* J. Murphy and C. Everson, *Restructuring School: Capturing the Phenomena* (NY.: Teachers College Press, 1991); J.E. Chubb, "Why the Current Wave of School Reform will Fail," *The Public Interest*, 1990; C. Flinn, "Biggest Reform of All," *Phi Delta Kappan*, 1990.

** Research and Policy Committee of the Committee for Economic Development, *An America That Works: The Life-Cycle Approach to a Competitive Work Force*, 1990.

just to qualify for the kinds of training that will be needed. For some this may require remedial instruction in new workplace skills.

As noted in the following section on "High Skills and High Wages Jobs," it may have been possible in the past to pay high wages to low skilled workers, but it will be difficult to do so in the service-oriented global economy that places a premium on information, problem solving skills, and creation of new products and services. Preparing the new and old workforce for these jobs will be critical to keeping productivity and real wage levels rising.

### Potential Strategies

1. Secondary and postsecondary programs will integrate academic and technical skills. This integration will require academic teachers and vocational teachers to form teams in order to integrate skills required in the workplace.
2. Special programs will be developed to retrain the unemployed or underemployed worker in the new workplace skills.
3. Programs, such as welfare and JTPA, will revise skill programs to include high level of workplace skill requirements.
4. A program will be established whereby business and industry will assume partial cost of retraining workers involved in early retirement, reduction of workforce, and closing of businesses.

### High Skills and High Wages Jobs

There is a shift from a manufacturing to a service economy, from an economy based on the organization and manipulation of physical resources to one founded on collecting, processing, and distributing information. Knowledge and information have become the key raw materials of today's economy. The workers whose skills are required to create products and services of higher value today need to be educated, trained, motivated, and rewarded differently from their industrial predecessors who turned out large volumes of standardized physical items.

The old organization of work around a strict division of labor derived from the demands of machine-based production processes, with rank and file workers tightly controlled by supervisors, is giving way to new models based on different organizing principles. The advance of automation and the application of microchip-based technologies transform the workplace and create a demand for workers who can work with other people, make decisions and innovations on the job, and create new products. In this type of workplace, the ability to gain new knowledge becomes crucial. Thus, there is a need for continuing education training throughout the working life.

Technological change is not the only factor increasing the skills required to perform many jobs. The move toward greater decentralization of decision making causes similar demands. In these less hierarchical organizational structures, workers gain more authority to make decisions affecting the company's products and customers. At the same time that organizations are leveling by removing

layers of management, employers are "downsizing," or "rightsizing," their permanent workforces, using part time and outside contracted employees.*

The state cannot produce a highly trained technical workforce needed in the previously described high skills workplace without providing its workers with a strong education. Today's children represent the workers who will have to be prepared for tomorrow's workforce. Children who began grade school in 1988 will be the high school graduates in the year 2000. The restructuring of education and the support of these children and the existing workforce are critical measures of the state's future.

Crucial to the workforce of tomorrow is the projection that 40 percent of the workers will be minorities and immigrants, groups with disproportionately low income levels. The birth rate of these groups is the highest of all segments of the population. The factors responsible for these young learners' later success in their working life are multidimensional and interrelated: prenatal care, health care, nurturing, nutrition, preschool, and adult support. Not educating these children will incur welfare, unemployment, and incarceration costs for the state.

By many indicators Kansas children face a life that is healthier and more promising than at any time in the past. Unfortunately a substantial number of children in Kansas remain at risk of being hungry, living in poverty, and consequently dropping out of school.** Because birth rates have dropped dramatically since the 1960s and remain at fairly low levels, there are fewer children than in years past. This makes the investment in the well-being of each child all the more critical.

### Potential Strategies

1. Existing area vocational schools will be transformed into technical colleges.
2. Secondary and postsecondary schools will integrate academic and technical skills.
3. All program data will be disaggregated by race, sex, and socioeconomic status. The program data must proportionately reflect the communities and populations they serve.
4. In areas of the state where community colleges and area vocational schools are in close proximity, they will become one operating unit of the postsecondary education system.

## ACCESS FOR INDIVIDUALS TO INFORMATION AND EDUCATION

Across the 80,000 square miles of Kansas is a public postsecondary system of sixteen vocational schools, nineteen community colleges, one technical school, one municipal university, and seven Regents' universities. Although these

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* Research and Policy Committee of the Committee for Economic Development, *An America That Works: The Life-Cycle Approach to a Competitive Work Force*, 1990.

** See Chart 2 in which 1989-90 data show one out of four public school students, or 102,011 students, are at risk in Kansas.

## Chart 2
## Children At Risk*

| | % of Births Low Weight 1988 | Infant Mortality (per 1000) | % of All Births to Teens 1988 | Per Capita Income 1989 | % in Poverty < 18 Years 1989 | Avg. Monthly AFDC Payment** 1989 | % Nonelderly Without Health Insurance |
|---|---|---|---|---|---|---|---|
| Kansas | 6 | 8 | 11 | $16,182 | 14 | $345 | 13 |
| U.S. | 7 | 10 | 13 | $17,567 | 20 | $381 | 17 |

* Population Reference Bureau, Inc., *America in the 21st Century*, 1990.

** Average monthly benefit for a single mother with two children.

postsecondary institutions are irregularly situated around the state, with the western part of the state having the least number of institutions, most Kansans are within fifty miles of a postsecondary institution or its outreach program. Access to the institution usually means physical attendance at the site of the school or one of its programs.

This postsecondary school system has served the majority of Kansans well in the past, because many of the citizens attended Kansas schools long enough to acquire appropriate degrees or hours of training and never needed to return. Education was a one-time requirement, usually endured early in life.

Today the system is no longer fitting for a state whose economy depends on the high qualifications of its workforce. The foundation of today's economy is people — the human capital represented by their knowledge, skills, organizations, and motivations. Employers need workers with the new basic workplace skills. The workforce has to know how to learn, think creatively and critically, communicate effectively, solve problems, and analyze information. The job requirements demand that employees be highly numerate, literate, and innovative.

To provide this needed workforce, postsecondary institutions should be prepared to enter-exit at various times in the people's work life. Because the approximately 60 percent of Kansas workers who had no need for lifelong learning in past years now must know how to learn and relearn job skills for a changing workplace, the various institutions of postsecondary education should consider the redrawing of service area boundaries. Areas of the state that are now served by only a university should be provided the opportunity to acquire lifelong learning and workplace skills that are not available from the four-year school. The provision of the workplace skills is extremely important to Kansans in cities.

Access to postsecondary institutions can no longer be through the state's highway and road infrastructure. Instead, the information highways of communications can be made available to all Kansans through the acquisition and use of fiber optics, microwave, cable television, and satellite linkages across the state. Three major areas — community training and retraining, business and economic development, and learning community — would be emphasized.

Kansas' current telecommunication system consists of a myriad of technologies: satellite, microwave, radio, copper wire, fiber-optic cable. Some are leased from telephone companies; others are customer-owned. However, fiber-optic cable is the mature technology with the most capacity and flexibility.

A fiber-optic communication system permits cost-effective two-way communication, whereas other technologies such as broadcasting and satellites are used predominately for one-way communication. Fiber-optic cable is used for interoffice trunking, and now video is driving fiber to the local loop. Fiber is cost effective because it is buried underground, has low maintenance, and permits consolidation of all information delivery into one transmission medium. Dollar for dollar, fiber yields 1,000 times the bandwidth of ordinary copper wires. One pair of fiber will yield as much bandwidth as exists in all of common carrier radio frequencies available for microwave. As the electronics improve on each end, the channel capacity increases.

The state's dependence on information, global communication, and human resource development calls for fiber to transmit all signals including telephone calls, data transmission, fax (facsimile), graphics, animation, compressed television, full motion television, and high definition television.

Local communities, using fiber-optic cable two-way interactive video, could cluster together to share teachers for K-12 education, connect to community colleges and vocational schools for training and retraining, and receive undergraduate and graduate courses from Kansas universities. The same communication system through clustering could be used to expand the business community, to provide access to health care, and to deliver social services.* With these accomplishments, economic development for the state would be a reality.

### Potential Strategies

1. The state's *A Plan for Telecommunications in Kansas* (two-way video plan) which includes the "clustering" of communities concept as an integral part of the state's telecommunication system will be implemented.
2. The concept of assigned service areas for postsecondary education will be cojoined with a statewide delivery system that provides access to programs concerning new workplace skills.
3. All Kansas citizens will have access to training and retraining through a statewide system of community colleges and area vocational schools.
4. Remediation for university programs will be provided by community colleges.

### Information Required for Guidance, Training, and Placement

Most developed countries have a highly structured process to help learners make the transition from school to work or from work to retraining. In countries such as Germany and Japan there is a strong, conscious connection between school and work. In Germany, counseling about jobs and the world of work starts early and concludes with an apprenticeship practice which combines school work and on the job instruction. In Japan, the schools themselves select students for referrals to employers. In other countries, there is either a strong employment counseling and job placement function within the school system; or this function is carried out for the learners by a labor market authority of some type, working cooperatively with the schools.

In America, and Kansas, there are some schools that have developed good linkage to the work world, often found in the guidance office of vocational schools or the natural operation of cooperative education programs. However, the general pattern of counseling learners has been one of doing a whole lot more to link high school learners to college than to work. Employment assistance to departing learners never has been developed as a regular responsibility of the schools.

It should be noted that counselors, in some schools, are helping the non-college-bound learner, but their counseling services are clearly weighted to other functions. An ETS study of the 1980s showed that counselors across the nation spent only 4

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* Educational Interactive Video Task Force, *A Plan for Telecommunications in Kansas*, 1991.

percent of their time on job placement and 25 percent on occupational choice or career planning. The rest of their time had to be spent with learners on "choice of high school courses," 34 percent; "college admissions and selection," 30 percent; and "attendance and discipline problems," 27 percent.*

There is a dire need for a state process to assist learners' progress from school to work. Nationally, the U.S. Department of Labor assigned a high priority to improving the school-to-work process. Its Employment and Training Administration established a new Office of Work-Based Learning as a focal point for the department's job and training partnerships with the private sector. One of its principal tasks was to "assist young people with their school-to-work transition so they can move into productive careers and upgrade their job skills." The director of the office made a principal recommendation: the expansion of "structured work-based training programs through the development and implementation of new training program models based on features of apprenticeship."**

### Potential Strategies

1. Elementary education will include an objective to encourage all children to develop dreams of work goals.
2. A program for training teachers, parents, and students about career options and job skills will be developed and provided to schools and community centers.
3. Each learning community will establish a career center which would provide services on training and skill requirements.
4. A plan for implementing a school-to-work apprenticeship program in appropriate areas of the state will be developed.

## Individualization of Services and Programs

Learners are individuals, possessing unique needs, attitudes, goals, motivations, and self-concepts. This individuality of learners has complicated the process of our industrial model of education in which all learning styles are forced to respond to one teaching style. Often times those learners who can not adapt to teacher-centered learning drop out of school or fall behind the other learners. Furthermore, those students who do remain in school do not acquire the new work skills, as identified in the "Integration of Learning and Working" section, because the emphasis of the outdated model is on the schooling process and not on the student outcomes of the process, i.e., accreditation is by "seat time" vs performance and competency achievement.

No longer can Kansas allow such a loss of potential wage earning power in its economy. Education can be restructured to provide for individualized treatment of learners with learner-centered instruction and to develop new learners with

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* Education Testing Service, *Survey of Career Information Systems in Secondary Schools*, 1981.

** James D. Van Erden, *Work-Based Learning: Training America's Workers, Employment and Training Administration*, U.S. Department of Labor, 1990.

skills in problem solving, problem identifying, and strategic brokering which links problem solvers and problem identifiers.* A major delivery system of individualized instruction is distance education through new technologies, which offer instruction even though educator and learner are at a distance from each other.

Distance education started with, and still includes, correspondence study. However, distance education has expanded to include media, such as audio and videocassettes, teleconferencing, television, and computers. As previously mentioned, Kansas' investment in a telecommunication system, especially the fiber-optic cable technology, will bring education and economic development to all communities and homes.

The advantages to the state in providing education to Kansas learners through a fiber-optic telecommunication system outweigh the disadvantage of start-up cost and maintenance. As the gap between the education of workers and the new work skills required for jobs continues to grow, Kansas has little choice but to invest in a postsecondary delivery system which offers every citizen access to information, education, and government services. Distance education can fit into every Kansan's busy schedule and provide knowledge, skill, and attitudes so vital for making the choice between high skills or low wages.

### Potential Strategies

1. Carnegie units of study will be eliminated and replaced with individualized performance-based education programs.
2. Access to ABE-GED centers will be extended to every citizen through outreach or telecommunication technology.
3. Every Kansan will have access to training and retraining and lifelong learning through a network of community and technical colleges.

## COORDINATION AMONG PROGRAM PROVIDERS AND FUNDING AGENCIES

Fundamentally, this plan is calling for a new way of thinking about and acting on a wide variety of economic and education issues that will determine the quality of the Kansas workforce. The goal of the plan is to identify strategies and promote new approaches in helping Kansans develop and fully utilize the skills and talents that will keep the state and national economy strong and productive.

The policies concerning postsecondary institutions and the funding of the programs and services those institutions provide are segmented artificially by age, level, and subject matter. For example, a single parent returning on a JTPA grant to a community college for skill training could be the responsibility of three state agencies: education, human resources, and social rehabilitation services. Instead of meeting this student's education, welfare, child care needs at one place, the state,

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* Robert B. Reich, *The Work of Nations: Preparing Ourselves for 21st Century Capitalism*, 1991.

through fragmented and unconnected policies, shifts the cost and service from one agency to another. Often times the process is redundant, although all three agencies have the same goal: prepare the client for the workforce.

Another example of the need to integrate program services and support is that of child development and education. The agencies that serve children and young people are frequently isolated from one another. Early childhood development used to be considered more or less the exclusive province of the family. Today, development in the earliest years of life involves a more variable set of agency responsibilities, including less exclusive involvement of families and involvement of child care, education, health, and social service agencies. The pattern of agency responsibility is in a state of flux.

Policies that affect the workforce need to be integrated. Rigid delineation of each agency's or program's responsibilities puts the state's effort on the process and not on the client. The mutual interests, obligations, and relationships of state agencies and programs need to be redefined to ensure the client receives appropriate intervention services.

### Potential Strategies

1. The learning community concept will be developed in every community which will allow for the coordination of services and training to be delivered to one location at the local level.

2. One community council will be established to identify needs, coordinate services of all local agencies, provide direction and relay information to the state level, thus eliminating the numerous councils of special interest groups.

### Articulation of Programs and Schools

There is no human resource development system in Kansas. There is a two-pronged system of skill development programs. (1) The network of unrelated skill development programs, most of which came from educational, social, and economic goals, is designed to help the special needs and disadvantaged population. The largest of these programs is Job Training Partnership Act (JTPA). (2) In addition, there is an economic development program which is to attract new and to expand old business and industry located in the state. The skill training provided is short duration, intended to train workers for new jobs and to upgrade the skills of those already in the workforce. Some of this training helps fill specific skill shortages in the state, and some helps companies upgrade skills of selected groups of line workers.

This fragmented system of overlapping skill development programs is further complicated by an incoherent system of standardization or information exchange services on which various providers and users of skills can rely. The language which employers and workers use to discuss expected skills in the labor market is skills based on classifications. There is not one classification for communicating the description and standards of occupations, but seven different classification systems used by various federal agencies and three additional systems used by the armed services. The United States Department of Labor's Dictionary of

Occupational Titles lists 12,000 classifications. Standards for jobs are set by over 500 national and regional groups. For example, to set standards for 384 occupations, the U.S. Department of Labor's apprenticeship program uses 97 separate industry committees.

The lack of standardization across this disorganized system of staff development programs makes it difficult for learners and skill providers to combine courses into a logical sequence of advancement toward higher skilled work. Although many workers receive little or no education or training beyond high school, those who do receive training take occasional courses which are not tied to any certification that has been laid out by industry or business. As a consequence, articulation of programs occurs between postsecondary schools that have written agreements, but not for all institutions that provide postsecondary education.

### Potential Strategies

1. All training and retraining programs will meet the standards referred to in the competency-based system as adopted by the State Board of Education.
2. The state will fund the development of a uniform system of skills classification for use in postsecondary education institutions.

### Funding Sources and Processes

Community colleges' vocational programs are funded at a rate that is 1.5 times higher, and 2.0 higher at three postsecondary institutions, than that of academic programs in recognition of the higher cost of offering vocational programs. Since highly technical programs (e.g., nursing, biomedical equipment technology) cost much more per credit hour than other programs (e.g., paralegal, accounting, business administration), colleges gain more financially by offering lower cost programs. This practice creates a disincentive for colleges to offer expensive programs even though such programs might contribute significantly to the economic development of the region and state.

Because programs are not funded on a continuum defined by relative cost, colleges have little incentive to offer or implement more costly, highly technical programs that could have a significant impact upon regional economies. For example, at one community college the cost per credit hour for interior merchandising is approximately $40.00, while the cost for biomedical equipment technology is approximately $373.00. State aid to community colleges for vocational enrollment is $39.375 per credit hour; thus the cost of the interior decorating program is almost totally covered by state aid, yet state aid covers only 10.5 percent of the biomedical equipment program. The cost of equipment and perhaps of instructors accounts for the difference in program cost.

The current state funding system encourages area vocational schools to keep students in a program for the maximum number of hours, rather than individualizing training to enable students to develop competency regardless of the amount of time required. These schools are currently reimbursed at 85 percent of the local cost per instructional hour (i.e., time spent by student in class).

To provide business and industry with employees who are job ready, the training needs to change from one that is paid for accumulation of hours to one that is paid

for results — demonstrated competency in technical and academic skills. An open-entry, open-exit competency-based system is so important to an effective vocational education system.

### Potential Strategies

1. A process which eliminates clock hours and units of instruction as criteria for funding vocational-technical programs at community colleges and area vocational schools will initiate the development of a new weighted funding formula.
2. A new funding formula for vocational-technical courses and programs will include incentives for the postsecondary institutions to provide high skill/high wage programs.
3. The state will assume more responsibility in funding community college programs as it does other postsecondary programs, i.e., Regents' programs and area vocational schools.
4. Out-district tuition will be replaced with state sources.
5. A statewide levy or technology tax will assist postsecondary education in acquiring equipment for high technology.

### Accountability for Results and Use of Financial Resources

Accountability of postsecondary education expenditures is a long standing concern. The concern is best stated in a twofold question: What is the investment in postsecondary education expected to buy and how can the outcomes of the investment be measured? There are several factors surrounding postsecondary education that hamper the answering of this question.

First, as previously noted in the section on "Articulation of Programs and Schools," economic, social, and education programs that incorporate work training as part of their mission have nothing to bind them all together. The result is a complex and fragmented network of training efforts. Thus, evaluation has been focused on hours required in programs, services available for program participants, and employment in any kind of job rather than technical and academic skills in related work.

Second, the lack of common classification for skills makes it impossible to compare programs. Lack of agreement on how to define levels of skill attainment or competency makes it difficult to establish workable outcome standards. In Kansas, 25 percent of the vocational-technical programs are competency-based. Only one area vocational school is 80 percent competency-based.

Third, most program efforts have been narrowly focused on training programs for the academic and economically disadvantaged rather than building a single comprehensible system to meet the training needs of employers.

Fourth, the training efforts have not been market-driven. The assumption has been that learners will do better economically through public investment in their training. People think in terms of federal funding categories, thus ignoring the need for employers to contribute to the development of the non-college educated

workforce. Data show that nationally, companies spend only one-third of the $30 billion that goes to formal training on the non-college educated workforce.* This amount affects no more than 8 percent of the frontline workers.

### Potential Strategies

1. A system of performance measures for vocational/technical education will be developed and implemented by 1992.

2. All vocational-technical programs will be open-entry, open-exit competency-based.

## COMMUNITY COLLEGES AS REGIONAL CENTERS

During the coming decade, economists and futurists predict the fate of businesses and employees will be determined by how well they compete in the New Global Commerce System. This new paradigm for business is based on global markets and invisible national borders.** Robert Reich describes the phenomenon in which business must now operate as a "Global Web." The "Web" allows business to choose any country where it will design, engineer, fabricate, and assemble products. The "Web" is not limited to manufactured goods: to a growing degree service-based companies are moving labor-intensive activities to areas of the world where the ratio of labor costs and workforce skills meet most effectively.***

This change in business operations has been made possible by satellites, low-cost shipping, worldwide availability of capital, technology development, and low-cost and highly trained labor pools. Although only the largest corporations are currently taking advantage of this flexibility, as development, transportation, and other costs continue to decline around the world, smaller businesses will be able to compete in the world market but operate in their own community. Even now the smallest businesses use such technological assistance as the facsimile (fax) copier and the computer-aided design (CAD) to improve their products and sales.

The prime example of this phenomenon is the PC industry where small companies can enter the market practically overnight and succeed spectacularly. Compaq computer is the best known of the companies that accomplished this—it entered the market in 1983 and by 1990 it had revenues of $3 billion. Compaq, like most companies in the PC industry, does very little manufacturing. It purchases most of its components and has final units assembled overseas; it sells through a dealer

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* The Commission on the Skills of American Workforce, *American's Choice: High Skills or Low Wages*, 1990.

** William H. Kolberg and Foster C. Smith, *Rebuilding America's Workforce: Business Strategies to Close the Competitive Gap*. National Alliance of Business, 1992, pp. 8, 17, 27.

*** Robert Reich, *The Work of Nations: Preparing Ourselves for 21st Century Capitalism*. New York: Alfred A. Knopf, 1991, p. 114.

network.[+] Microtech, in Lawrence, Kansas, employs seven technicians who assemble the components built in Taiwan into a PC to be sold and used in the Midwest.

The New Global Commerce System is one in which possession of natural resources, capital, location, and technology has given way to worker knowledge and training, especially those skills recommended by the Secretary's Commission on Achieving Necessary Skills (SCANS).[++] To the extent that goods and services can be financed, designed, fabricated, and assembled anywhere, worker productivity will be a deciding factor on where businesses choose to do their work. Success in the global system will fall on the businesses that employ high performance workers with the new workplace skills.

Those businesses that do not have well trained, productive workers can either search for low-cost workers to lower production costs or simplify work to accommodate worker level skills. Either choice will result in the companies going out of business or taking their production offshore—both strategies negatively impact the economy because workers lose their job or receive lower wages.

Regardless of some critics' skepticism about the effect of the New Global Commerce System or the Global Web on the state and local workplace, to ensure Kansas a first place economy, both business and education communities in Kansas must combine forces to rethink the future of business and training. First, businesses must convince themselves and workers that (1) new work systems will increase productivity and profitability, resulting in higher paying jobs and (2) large numbers of workers employed to produce products and services in old-fashioned, mass production systems are noncompetitive and thus nonprofitable. Second, education must be prepared to close the gap in the training and retraining of workers and to help business upgrade work and services.

The key to the new work systems is a lifelong school-to-work approach that prepares new workers and offers continuous education and training for workers already on the job. In looking across the range of education delivery systems in Kansas, the institution best suited to provide training and retraining is the community college. To a large extent community colleges are already an important facet of the state's training system. Since 1970 enrollment in community colleges has increased by 350 percent both in the nation and state. Only one-fifth of the students in community colleges plan to transfer to four-year colleges and to receive a baccalaureate degree. More than half of the students in two-year institutions are over the age of 25, and the average age is 31 years. The statistics suggest that community colleges are principally serving people who have decided to prepare for a vocation or to advance their career possibilities by returning to school.

### New Worker

For the preparation of the new worker, many community colleges are already providing a school-to-work program. The tech-prep or "two plus two" model of

[+] Reich, p. 93.

[++] See Appendix for SCANS competencies and skills.

academic and vocational integration merges into the ideal seamless system for lifelong learners whose progress is measured by demonstrating competencies and achieving outcomes. Essentially, the tech-prep program is skills training, which includes the final two years of high school and an additional two years of training in a local community or technical college, thus connecting high school, advanced skills training, and work. Some versions have students working during some or all of this period with specified employers in a quasi-apprenticeship system; the specifics of a classroom-workplace mix would probably depend on a particular occupational career and the nature of the local collaborative that establishes the program.

The strength of this program is that it is managed by a community collaborative with focus on the needs of local employers. Students and workers do not undertake training in a vacuum in hopes that an employer has need for their skills—they are offered training for jobs that exist. Students and workers with a particular affinity for careers that are not available in their home towns should have the opportunity to study in other communities where the community college offers their preference.

### Current Worker

In addition to establishing workforce preparation programs, community colleges must also help to upgrade the current workforce. Business leaders competing internationally need help now with worker retraining. All community colleges in Kansas already provide customized training to their local businesses. Companies are enlisting the aid of community colleges to teach their employees everything from basic workplace literacy to calculus to computer-aided manufacturing. Community colleges often work with company management and then develop special courses to meet the needs of that particular company.

A recommended system for community colleges to deliver programs and courses for local businesses is similar to the tech-prep model with its emphasis on competencies and outcomes. Community colleges would offer a "smorgasbord" of skills and competencies from which local businesses could choose, depending on the needs of their employees. The community colleges would then schedule the time for delivering the training in the employer-selected skills and competencies at the business site. The selection method eliminates the redundancy and irrelevancy of courses and materials and promotes the attainment of outcomes.

### Leadership

In addition to the training and retraining functions, community colleges must take a leadership role as a resource to businesses in the state in developing new work systems and markets. Workplace specialist staff of the community colleges can support (1) businesses in adopting new technology and identifying new markets and (2) individuals in starting up and maintaining entrepreneurial ventures. The paradigm shift from junior college, established to provide the first two years of college, to community colleges, committed to meet the educational needs of the community and to assist business and industry within the community and region adapt to the rapid change in technology, must be made in Kansas.

Paramount to this leadership role would be the community colleges' relationship with the research and development (R & D) taking place in Kansas universities and K-TECH. Community colleges would be the link between the R & D of new products and practices in the state's universities and colleges and the production and marketing in business and industry. Somewhat similar to the strategy that Kansas State University uses to get its R & D for the state's agricultural system to the farming industry through the Agriculture Extension Service, the community college would work with the universities and K-TECH to transfer basic product research to the incubation phase and eventually to marketing by business and industry. There is little difference between a state-operated agricultural college in a university helping farmers and the farm industry and local community colleges helping manufacturers and businesses in the state; both are strategies designed for economic development in Kansas.

There are serious obstacles to overcome before all Kansans can use community colleges for training and retraining and business resources.

1. The 19 community colleges are located in only 18 of the 105 counties of Kansas. The 18 counties with access to a community college represent 921,174 of the approximately 2.5 million population in Kansas, or 36 percent. Thus, two-thirds of the Kansans who need or want training and retraining have limited access to institutions providing such programs and courses. Especially left out are the Kansans who live in communities in which four-year schools reside. For example, the workforce in Lawrence and Wichita is especially limited in job choice and potential for earning.

2. The state currently funds the community colleges on credit hour enrollment. Accordingly, the community colleges do not receive funds for the short courses that many employers need because they do not meet the credit hour format, e.g., course lasts so many hours and uses a standard curriculum. For this reason, when helping businesses with its training problems, community colleges must seek self-funded classes through contracts; inevitably only larger employers can afford to use the community college classes.

The community colleges are clearly a source for developing employees both now and in the future. Partnered with business and high schools, they can provide a smooth transition from school to work. They can also provide employee retraining and management consulting for companies and individuals. The state must move forcefully to galvanize this resource.

### Potential Strategies

1. Legislation that changes how community colleges are funded for technical and customized training will be developed and recommended.

2. Access for all counties to training and retraining and business resources will be provided through regionalization of the state.

3. New local funds will be identified to address local needs and community college partnerships with business and industry.

4. The role of community colleges will be redefined to include partnership with universities' research in economic development.

5. Representatives of community colleges and higher education will develop a study which assesses the need for comprehensive technical programs in all areas of the state and will make recommendations for legislation.

6. Constraints that hinder a Kansan from enrolling in an applied course of study because of his/her residence will be identified and reported to the State Board.

## SUMMARY

Throughout this plan there is convincing evidence that Kansas needs a newly defined system of education based on the maximization of each Kansan's potential in learning. The existing formal system of education which was designed for a period of time when learning beyond childhood and youth was confined to small numbers of selected people does not recognize that societal and economic learning needs have changed. The education community, as we know it today, no longer dominates learning and controls learning experiences.

Instead the education system should be redefined to include the following:

1. A concern for helping students learn how to learn
2. Recovery of the educational system's role in socialization of adults to acquire such skills as working in groups, feeling good about one's self, understanding one's self abilities and emotions, and separating people from problems
3. A configuration of learning activities in which learners can enter and exit as simply and smoothly as possible from school to work
4. Elimination of the distinction between full time and part time students
5. An ability to adjust continuously to what is taking place in learning and not to assume that learning is the exclusive prerogative of the educational system
6. Recognition of various symbols of learning accomplishments, such as learner-developed portfolios
7. Realization or acceptance that lifelong learning is essential to economic development and the improvement of life's quality for all Kansans.

With this educational system in place, Kansas can base its very essence on the learning capacities of all of its citizens throughout their lives. Although visionary in scope, this Kansas is possible, for it is based on the most human of all human characteristics, the capacity to knowingly and willingly transform oneself. Along with loving, learning is our most promising endowment.

# Summary
# of
# Potential Strategies

## SKILLS REQUIRED OF THE WORKFORCE

### Potential Strategies

1. The assessment and remediation of basic skills or employability enhancement skills will be available through community colleges for all postsecondary institutions.

2. Elementary and secondary exit outcomes will require basic skill development and employability enhancement skills. (See QPA model.)

3. The community colleges and area vocational-technical schools will develop a program designed to market the need for new workplace skills.

### Integration of Learning and Working

### Potential Strategies

1. Secondary and postsecondary programs will integrate academic and technical skills. This integration will require academic teachers and vocational teachers to form teams in order to integrate skills required in the workplace.

2. Special programs will be developed to retrain the unemployed or underemployed worker in the new workplace skills.

3. Programs, such as welfare and JTPA, will revise skill programs to include high level of workplace skill requirements.

4. A program will be established whereby business and industry will assume partial cost of retraining workers involved in early retirement, reduction of workforce, and closing of businesses.

### High Skills and High Wages Jobs

### Potential Strategies

1. Existing area vocational schools will be transformed into technical colleges.

2. Secondary and postsecondary schools will integrate academic and technical skills.

3. All program data will be disaggregated by race, sex, and socioeconomic status. The program data must proportionately reflect the communities and populations they serve.

4. In areas of the state where community colleges and area vocational schools are in close proximity, they will become one operating unit of the postsecondary education system.

## ACCESS FOR INDIVIDUALS TO INFORMATION AND EDUCATION

### Potential Strategies

1. The state's *A Plan for Telecommunications in Kansas* (two-way video plan) which includes the "clustering" of communities concept as an integral part of the state's telecommunication system will be implemented.

2. The concept of assigned service areas for postsecondary education will be cojoined with a statewide delivery system that provides access to programs concerning new workplace skills.

3. All Kansas citizens will have access to training and retraining through a statewide system of community colleges and area vocational schools.

4. Remediation for university programs will be provided by community colleges.

### Information Required for Guidance, Training, and Placement

### Potential Strategies

1. Elementary education will include an objective to encourage all children to develop dreams of work goals.

2. A program for training teachers, parents, and students about career options and job skills will be developed and provided to schools and community centers.

3. Each learning community will establish a career center which would provide services on training and skill requirements.

4. A plan for implementing a school-to-work apprenticeship program in appropriate areas of the state will be developed.

### Individualization of Services and Programs

### Potential Strategies

1. Carnegie units of study will be eliminated and replaced with individualized performance-based education programs.

2. Access to ABE-GED centers will be extended to every citizen through outreach or telecommunication technology.

3. Every Kansan will have access to training and retraining and lifelong learning through a network of community and technical colleges.

## COORDINATION AMONG PROGRAM PROVIDERS AND FUNDING AGENCIES

### Potential Strategies

1. The learning community concept will be developed in every community which will allow for the coordination of services and training to be delivered to one location at the local level.

2. One community council will be established to identify needs, coordinate services of all local agencies, provide direction and relay information to the state level, thus eliminating the numerous councils of special interest groups.

### Articulation of Programs and Schools

### Potential Strategies

1. All training and retraining programs will meet the standards referred to in the competency-based system as adopted by the State Board of Education.

2. The state will fund the development of a uniform system of skills classification for use in postsecondary education institutions.

### Funding Sources and Processes

### Potential Strategies

1. A process which eliminates clock hours and units of instruction as criteria for funding vocational-technical programs at community colleges and area vocational schools will initiate the development of a new weighted funding formula.

2. A new funding formula for vocational-technical courses and programs will include incentives for the postsecondary institutions to provide high skill/high wage programs.

3. The state will assume more responsibility in funding community college programs as it does other postsecondary programs, i.e., Regents' programs and area vocational schools.

4. Out-district tuition will be replaced with state sources.

5. A statewide levy or technology tax will assist postsecondary education in acquiring equipment for high technology.

**Accountability for Results and Use of Financial Resources**

**Potential Strategies**

1. A system of performance measures for vocational/technical education will be developed and implemented by 1992.

2. All vocational-technical programs will be open-entry, open-exit competency-based.

**Community Colleges as Regional Centers**

**Potential Strategies**

1. Legislation that changes how community colleges are funded for technical and customized training will be developed and recommended.

2. Access for all counties to training and retraining and business resources will be provided through regionalization of the state.

3. New local funds will be identified to address local needs and community college partnerships with business and industry.

4. The role of community colleges will be redefined to include partnership with universities' research in economic development.

5. Representatives of community colleges and higher education will develop a study which assesses the need for comprehensive technical programs in all areas of the state and will make recommendations for legislation.

6. Constraints that hinder a Kansan from enrolling in an applied course of study because of his/her residence will be identified and reported to the State Board.

## APPENDIX

## SCANS Competencies and Skills

## APPENDIX

### FIVE COMPETENCIES

Resources: Identifies, organizes, plans, and allocates resources

A. *Time*—selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules
B. *Money*—uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives
C. *Material and Facilities*—acquires, stores, allocates, and uses materials or space efficiently
D. *Human Resources*—assesses skills and distributes work accordingly, evaluates performance and provides feedback

Interpersonal: Works with others

A. *Participates as Member of a Team*—contributes to group effort
B. *Teaches Others New Skills*
C. *Serves Clients/Customers*—works to satisfy customers' expectations
D. *Exercises Leadership*—communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies
E. *Negotiates*—works toward agreements involving exchange of resources, resolves divergent interests
F. *Works with Diversity*—works well with men and women from diverse backgrounds

Information: Acquires and uses information

A. *Acquires and Evaluates Information*
B. *Organizes and Maintains Information*
C. *Interprets and Communicates Information*
D. *Uses Computers to Process Information*

Systems: Understands complex inter-relationships

A. *Understands Systems*—knows how social, organizational, and technological systems work and operates effectively with them
B. *Monitors and Corrects Performance*—distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions
C. *Improves or Designs Systems*—suggests modifications to existing systems and develops new or alternative systems to improve performance

Technology: Works with a variety of technologies

A. *Selects Technology*—chooses procedures, tools or equipment including computers and related technologies
B. *Applies Technology to Task*—understands overall intent and proper procedures for setup and operation of equipment
C. *Maintains and Troubleshoots Equipment*—prevents, identifies, or solves problems with equipment, including computers and other technologies

## A THREE-PART FOUNDATION

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens and speaks

A. *Reading*—locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules
B. *Writing*—communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts
C. *Arithmetic/Mathematics*—performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques
D. *Listening*—receives, attends to, interprets, and responds to verbal messages and other cues
E. *Speaking*—organizes ideas and communicates orally

Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons

A. *Creative Thinking*—generates new ideas
B. *Decision Making*—specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative
C. *Problem Solving*—recognizes problems and devises and implements plan of action
D. *Seeing Things in the Mind's Eye*—organizes, and processes symbols, pictures, graphs, objects, and other information
E. *Knowing How to Learn*—uses efficient learning techniques to acquire and apply new knowledge and skills
F. *Reasoning*—discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem

Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, and integrity and honesty

A. *Responsibility*—exerts a high level of effort and perseveres towards goal attainment
B. *Self-Esteem*—believes in own self-worth and maintains a positive view of self
C. *Sociability*—demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings
D. *Self-Management*—assesses self-accurately, sets personal goals, monitors progress, and exhibits self-control
E. *Integrity/Honesty*—chooses ethical courses of action